

## 11/11/13     Agenda

- Warm up
- **Remediation packet for Chapter 2 is on my web site,  
you have until 11/15 to get it to me!**
- Review 3.4 day 2 Worksheet
- Quiz Review Sections 3.1-3.4
- Homework - Quiz Review Worksheet 3.1-3.4
  - (whatever you don't finish in class)

Warmup:



- Grab a slip of paper
- Put your name on it
- Distribute & Combine Like Terms

$$2d + 3(7+d) - 15$$

Handwritten work showing the distributive property and combining like terms:

$$| +2d | +21 | +3d | -15 |$$

Red arrows show the distribution of 3 to 7 and d. Blue brackets group the terms. A green bracket groups the like terms  $5d + 6$ .

$$5d + 6$$

Diagram illustrating the distributive property:

$$3 \begin{array}{|c|c|} \hline 7 & +d \\ \hline 21 & +3d \\ \hline \end{array}$$

#15

$$-7(8-2n) \geq 7(6-5n)$$

$$\begin{array}{rcl} -56 + 14n & \geq & 42 - 35n \\ +35n & & +35n \end{array}$$

$$\begin{array}{rcl} -56 + 49n & \geq & 42 \\ +56 & & +56 \end{array}$$

$$\begin{array}{rcl} 49n & \geq & 98 \\ \hline 49 & & 49 \end{array}$$

$$n \geq 2$$

## Sections 3.1 - 3.4

### - Section 3.1 - Inequalities & Their Graphs

- Words to Symbols
- Graphing (open or closed circle)
- Graph to Inequality
- Is a value a solution to an inequality?

$$x \leq 7$$


### - Section 3.2 - Solving One-Step Inequalities with + or -

- Subtract to undo Addition
- Add to undo Subtraction

### - Section 3.3 - Solving One-Step Inequalities with \* or /

- Divide to undo Multiplication
- Multiply to undo Division
- If you multiply or divide by a negative number,  
REMEMBER TO FLIP THE SIGN!!!

### - Section 3.4 - Solving Multi-Step Inequalities

- Distribute and Combine Like Terms before you do anything else!
- Do reverse order of PEMDAS
- If an inequality has variables on both sides, there are 3 possible outcomes.
  - An answer with a variable.
  - No variable, TRUE statement (all solutions)
  - No variable, FALSE statement (no solutions)

# Section 3.1 - Inequalities & Their Graphs

Target 3A & 3B

Words to  
Symbols:

x is less than or equal to 7

$$x \leq 7$$

p is greater than or equal to 9

$$p \geq 9$$

Graphing:

Type of Circle:

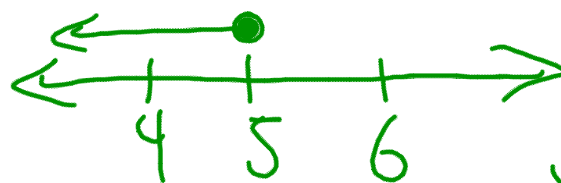
Open:

$$< >$$

Closed:

$$\leq \geq$$

Graph to  
Inequality:



$$x \leq 5$$

Is a value a  
solution to an  
inequality?

Example:

Determine whether each number is a solution to the following inequality:

$$5y - 7 > 13$$

a.) ~~-4~~ **YES**  
**NO**

b.) 8

~~$$\begin{aligned} 5(-4) - 7 &> 13 \\ -20 - 7 &> 13 \\ -27 &> 13 \end{aligned}$$~~

$$\begin{aligned} 5(8) - 7 &> 13 \\ 40 - 7 &> 13 \\ 33 &> 13 \end{aligned}$$

## Section 3.2-3.3 - Solving One-Step Inequalities

Solving  
Inequalities  
Using + & -:

We solve one-step inequalities the same way we solve a one-step equation, by using opposite operations. This means if there is addition, we must subtract. If there is subtraction, we must add. When we have the variable by itself, the inequality is solved and we can graph it.

$$\begin{array}{r} x + 3 < 11 \\ -3 \quad -3 \\ \hline x < 8 \end{array}$$

$$\begin{array}{r} x - 5 \geq 2 \\ +5 \quad +5 \\ \hline x \geq 7 \end{array}$$

Solving  
Inequalities by  
Multiplying or  
Dividing

Rule: When we **multiply** or **divide** by a negative number, we **MUST** flip the sign (symbol).

$$\begin{array}{r} 2x < 10 \\ 2 \quad 2 \\ \hline \end{array}$$

$$x < 5$$

$$-4 \cdot \left( \frac{x}{-4} \right) > (-10)(-4)$$

FLIP  
IT

$$x < 40$$

## Section 3.4 - Solving Multi-Step Inequalities

Solving  
Multi-Step  
Inequalities:

PEMDAS

When we solve, we want to use reverse order of operation, just like we would when solving equation.

$$3x + 7 < 16$$

$$\begin{array}{r} -7 \quad -7 \\ \hline 3x < 9 \\ \hline x < 3 \end{array}$$

$$6m - 3 \geq -21$$

Solving  
Inequalities  
with  
distribution  
and CLTs:

$$3(x + 4) < 9$$

$$3x + 12 < 9$$

$$(\underline{b} + 1) - \underline{4b} < -5$$

$$+\underline{1b} + 1 - \underline{4b} < -5$$

$$-3b + 1 < -5$$

Summary:

When solving inequalities, be sure to distribute and combine like terms BEFORE you add/subtract and multiply/divide from each side!!! Go backwards in PEMDAS

## Section 3.4 - Solving Multi-Step Inequalities day 2

### Target 3D

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When solving inequalities with variables on both sides, move the smaller one to create less work. When you get an answer, remember your three situations. If there is a variable, graph your answer. If the variables cancel, then look to see if it is a true statement (all solutions) or a false statement (No Solutions). Don't forget about flipping your sign if you multiply or divide by a negative number!

$$\begin{array}{r} 6n - 1 > 3n + 8 \\ -3n \quad -3n \\ \hline 3n - 1 > 8 \\ +1 \quad +1 \\ \hline 3n > 9 \\ \frac{3n}{3} > \frac{9}{3} \end{array}$$

$$n > 3$$

$$\begin{array}{l} 10 - 8a \geq 2(5 - 4a) \\ 10 - 8a \geq 10 - \end{array}$$